

(1/19/90)

ER PROGRAM DATA ASSESSMENT  
SUMMARY REPORT FORM

Batch No. 8903L833 Site Background Characterization  
Laboratory R.F. Weston-Lionville No. of Samples/Matrix 5/Water  
SOW # 10/86 (Rev. 2/88) Reviewer Org. TechLaw, Inc.  
Sample Numbers SW094001, SW095001, TB032789, SW095001FB, SW094001D

Data Assessment Summary

	VOA	Comments
1. Holding Times	<u>A</u>	<u>Holding times greater than 7 days for aromatics, Action Item 1</u>
2. GC/MS Tune/Instr. Perf.	<u>V</u>	<u></u>
3. Calibrations	<u>A</u>	<u>3 RRFs out in each calibration, 1 RSD out, Action Item 2</u>
4. Blanks	<u>A</u>	<u>Method blank contamination, Action Item 3</u>
5. Surrogates	<u>X</u>	<u>Surrogates out in Matrix Spike and MSD, Comment 4</u>
6. Matrix Spike/Dup.	<u>X</u>	<u>Low spike recoveries, Comment 2</u>
7. Other QC	<u>X</u>	<u>Trip blank and Field blank contamination, Comment 1</u>
8. Internal Standards	<u>V</u>	<u></u>
9. Compound Identification	<u>V</u>	<u></u>
10. System Performance	<u>X</u>	<u>Data processing errors, Comments 3 &amp; 5</u>
11. Overall Assessment	<u>A</u>	<u>Data acceptable with qualifications.</u>

V = Data had no problems.

A = Data acceptable but qualified due to problems.

R = Data rejected.

X = Problems, but do not affect data.

Data Quality: Data contained in this batch were reviewed and found to be acceptable with qualifications. Acceptable,  
qualified data may be used provided that individual values impacted by the "Action Items" listed below are appropriately flagged.  
(Refer to attached Results Summary Tables.)

1  
REVIEWED FOR CLASSIFICATION  
By [Signature]  
Date 10/25/91

L833/rk25  
A-DU04-000065

**Action Items:** 1) 7 day holding times were not met for aromatic compounds. The non-detects were estimated (UJ) for all samples.

2) 2-Butanone, 4-Methyl-2-pentanone and 2-Hexanone had RRFs less than 0.05 for both the initial and continual calibrations. The non-detect values for these three compounds were rejected (R) for all samples.

3) The blanks were contaminated with Methyl Chloride and Acetone. None of the samples met the 10x blank criteria for Methylene Chloride, therefore all samples were estimated and undetected(UJ). The Acetone values in samples TB032789 and SW095001FB were estimated and undetected (UJ) as well by not meeting the 10x rule.

4) Results which fall below the CRQL level and were not previously qualified will be estimated (J) unless instrument detection limits are available.

**Comments:** 1) Both the Field blank and Trip blank are contaminated with Acetone and Methyl Chloride.

2) Trichloroethene recovery was low in both the matrix spike and MSD. This compound was a contaminant in the samples. No action was taken because the value was below the CRQL and therefore the values were previously qualified.

3) Instrumentation identifications appeared to be unclear from labels on various forms to those on sample raw data. No action was taken.

4) Two surrogate recoveries in the matrix spike and 1 surrogate in the matrix spike duplicate exceeded QC limits. No action was taken.

5) The incorrect RRF values for VSTD50 were transcribed from the raw data to form 6A. The initial calibration five point curve must be generated within a twelve hour period. Calibration data is not directly affected.

**Note:** Data Summary Tables are attached.

Anthony W. Toth  
Reviewer Signature

1-16-90  
Date

## SITE NAME: Background Characterization

## CLP VOLATILE ORGANIC ANALYSIS: Low Water

## ANALYTICAL RESULTS (ppb)

Sample Location	VBLKLV039MB1	SW094001	SW095001	TB032789	SW095001FB	SW094001D		
Sample Number		4/10/89	4/10/89	4/10/89	4/10/89	4/10/89		
Sampling Date								
Remarks	Method Blank			Trip Blank	Field Blank	Duplicate		
Volatiles								
Compound	CRQL	DQ	DQ	DQ	DQ	DQ		
ug/L (ppb)								
Chloromethane	10	10 U V	10 U V	10 U V	10 U V	10 U V		
Bromomethane	10	10 U V	10 U V	10 U V	10 U V	10 U V		
Vinyl chloride	10	10 U V	10 U V	10 U V	10 U V	10 U V		
Chloroethane	10	10 U V	10 U R	10 U V	10 U V	10 U V		
Methylene chloride	5	5 U A	5 U A	6 U A	6 U A	5 U A		
Acetone	10	10 U V	10 U V	19 U A	10 U A	10 U V		
Carbon disulfide	5	5 U V	5 U V	5 U V	5 U V	5 U V		
1,1-Dichloroethene	5	5 U V	5 U V	5 U V	5 U V	5 U V		
1,1-Dichloroethane	5	5 U V	5 U V	5 U V	5 U V	5 U V		
1,2-Dichloroethene (Total)	5	5 U V	5 U V	5 U V	5 U V	5 U V		
Chloroform	5	2 J A	2 J V	5 U V	5 U V	5 U V		
1,2-Dichloroethane	5	5 U V	5 U V	5 U V	5 U V	5 U V		
2-Butanone	10	10 U R	10 U R	10 U R	10 U R	10 U R		
1,1,1-Trichloroethane	5	5 U V	5 U V	5 U V	5 U V	5 U V		
Carbon tetrachloride	5	11 V	11 V	5 U V	5 U V	12 V		
Vinyl acetate	10	10 U V	10 U V	10 U V	10 U V	10 U V		
Bromodichloromethane	5	5 U V	5 U V	5 U V	5 U V	5 U V		
1,2-Dichloropropane	5	5 U V	5 U V	5 U V	5 U V	5 U V		
cis-1,3-Dichloropropene	5	5 U V	5 U V	5 U V	5 U V	5 U V		
Trichloroethene	5	4 J A	4 J A	5 U V	5 U V	4 J A		
Dibromochloromethane	5	5 U V	5 U V	5 U V	5 U V	5 U V		
1,1,2-Trichloroethane	5	5 U V	5 U V	5 U V	5 U V	5 U V		
Benzene	5	5 U A	5 U A	5 U A	5 U A	5 U A		
trans-1,3-Dichloropropene	5	5 U V	5 U V	5 U V	5 U V	5 U V		
Bromoforn	5	5 U V	5 U V	5 U V	5 U V	5 U V		
4-Methyl-2-pentanone	10	10 U R	10 U R	10 U R	10 U R	10 U R		
2-Hexanone	10	10 U R	10 U R	10 U R	10 U R	10 U R		
Tetrachloroethene	5	5 U V	5 U V	5 U V	5 U V	5 U V		
1,1,2,2-Tetrachloroethane	5	5 U V	5 U V	5 U V	5 U V	5 U V		
Toluene	5	5 U A	5 U A	5 U A	5 U A	5 U A		
Chlorobenzene	5	5 U A	5 U A	5 U A	5 U A	5 U A		
Ethylbenzene	5	5 U A	5 U A	5 U A	5 U A	5 U A		
Styrene	5	5 U A	5 U A	5 U A	5 U A	5 U A		
Xylenes (Total)	5	5 U A	5 U A	5 U A	5 U A	5 U A		
Total Organic Concentration (ppb)	14	17	17	0	0	16		

U Indicates the compound was not detected above the Required Quantitation Limit.

J Quantitation is approximate due to limitations identified during the quality control review.

E: Exceeds calibration range, dilute &amp; reanalyze.

CRQL Contract Required Quantitation Limit in Micrograms per Liter (ug/L), Parts per billion (ppb).

DQ

V Valid

A Acceptable with qualifications

R Rejected

ER DEPARTMENT DATA ASSESSMENT  
SUMMARY REPORT FORM

Batch No. 8903L833 Site Solar Ponds  
Laboratory Roy F. Weston - Lionville No. of Samples/Matrix 4/Water  
SOW # 10/86 (Rev. 2/88) Reviewer Org. TechLaw, Inc.  
Sample Numbers SW095001FB, SW095001, SW094001, SW094001D

Data Assessment Summary

	BNA	Comments
1. Holding Times	<u>V</u>	
2. GC/MS Tune/Instr. Perf.	<u>V</u>	
3. Calibrations	<u>X</u>	<u>Comments 1 &amp; 2</u>
4. Blanks	<u>V</u>	
5. Surrogates	<u>V</u>	
6. Matrix Spike/Dup.	<u>X</u>	<u>Comments 3 &amp; 4</u>
7. Other QC	<u>V</u>	
8. Internal Standards	<u>X</u>	<u>Comment 5</u>
9. Compound Identification	<u>V</u>	
10. System Performance	<u>V</u>	
11. Overall Assessment	<u>V</u>	

V = Data had no problems.

A = Data acceptable but qualified due to problems.

R = Data rejected.

X = Problems, but do not affect data.

Data Quality: (Refer to attached Data Summary Tables.)

**Comments:** 1) Several compounds had %RSDs greater than 30% in the 4/3/89 initial calibration. However, no action is taken because there were no positive results for these compounds.

2) The chromatogram for the continuing calibration of 4/6/89 was not submitted.

3) The recoveries of 2,4-Dinitrotoluene and Pentachlorophenol exceeded spike recovery criteria in the matrix spike and matrix spike duplicate. No action is taken because results are not qualified solely on MS/MSD data.

4) The matrix spike duplicate analysis contained 720 ppb of Bis(2-ethylhexyl)phthalate, while the corresponding sample and matrix spike analysis contained none. This compound appears to have been introduced into the MSD analysis through contamination.

5) The peak area for the internal standard Perylene-d12 was below criteria in the method blank. However, no action is necessary because data did not appear to be adversely affected.

**Note:** Data Summary Tables are attached.

William T Fee  
Reviewer Signature

6/22/90  
Date

Sample Location	SBLK	SW095001FB	SW095001	SW094001D	SW094001		
Sample Number		3/27/89	3/27/89	3/27/89	3/27/89		
Sampling Date		Field Blank		Field Duplicate			
Remarks	Method Blank	DQ	DQ	DQ	DQ		
Semivolatiles (BNA)	CRQL						
Organic Compound	ug/L						
Phenol	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Bis(2 - Chloroethyl)ether	10	10 U V	10 U V	10 U V	10 U V	10 U V	
2 - Chlorophenol	10	10 U V	10 U V	10 U V	10 U V	10 U V	
1,3 - Dichlorobenzene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
1,4 - Dichlorobenzene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Benzyl alcohol	10	10 U V	10 U V	10 U V	10 U V	10 U V	
1,2 - Dichlorobenzene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
2 - Methylphenol	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Bis(2-chloroisopropyl)ether	10	10 U V	10 U V	10 U V	10 U V	10 U V	
4 - Methylphenol	10	10 U V	10 U V	10 U V	10 U V	10 U V	
N-Nitroso-di-n-propylamine	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Hexachloroethane	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Nitrobenzene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Isophorone	10	10 U V	10 U V	10 U V	10 U V	10 U V	
2 - Nitrophenol	10	10 U V	10 U V	10 U V	10 U V	10 U V	
2,4 - Dimethylphenol	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Benzoic Acid	50	52 U V	52 U V	50 U V	51 U V	51 U V	
Bis(2-Chloroethoxy)methane	10	10 U V	10 U V	10 U V	10 U V	10 U V	
2,4 - Dichlorophenol	10	10 U V	10 U V	10 U V	10 U V	10 U V	
1,2,4 - Trichlorobenzene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Naphthalene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
4 - Chloroaniline	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Hexachlorobutadiene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
4-Chloro-3-methylphenol	10	10 U V	10 U V	10 U V	10 U V	10 U V	
2-Methylnaphthalene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Hexachlorocyclopentadiene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
2,4,6-Trichlorophenol	10	10 U V	10 U V	10 U V	10 U V	10 U V	
2,4,5-Trichlorophenol	50	52 U V	52 U V	50 U V	51 U V	51 U V	
2-Chloronaphthalene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
2-Nitroaniline	50	52 U V	52 U V	50 U V	51 U V	51 U V	
Dimethyl phthalate	10	10 U V	10 U V	10 U V	10 U V	10 U V	
Acenaphthylene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
2,6-Dinitrotoluene	10	10 U V	10 U V	10 U V	10 U V	10 U V	
3-Nitroaniline	50	52 U V	52 U V	50 U V	51 U V	51 U V	

E Exceeds calibration range.  
 U Indicates the compound was not detected above the instrument quantitation limit.  
 J Quantitation is approximate due to limitations identified during the quality control review.  
 CRQL Contract Required Quantitation Limit In Micrograms per Liter (ug/L), Parts per Billion (ppb).

DQ Data Qualifier  
 V Valid  
 A Acceptable with qualifications  
 R Rejected

SITE NAME: Solar Ponds

CLP SEMIVOLATILE ANALYSIS: Low Water

ANALYTICAL RESULTS (ug/L)

Sample Location	SBLK	SW095001FB	SW095001	SW094001D	SW094001				
Sample Number		3/27/89	3/27/89	3/27/89	3/27/89				
Sampling Date		Field Blank		Field Duplicate					
Remarks	Method Blank	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ
Semivolatiles (BNA)	CRQL								
Organic Compound	ug/L								
Acenaphthene	10	10 U V	10 U V	10 U V	10 U V	10 U V			DQ
2,4-Dinitrophenol	50	52 U V	52 U V	50 U V	51 U V	51 U V			
4-Nitrophenol	50	52 U V	52 U V	50 U V	51 U V	51 U V			
Dibenzofuran	10	10 U V	10 U V	10 U V	10 U V	10 U V			
2,4-Dinitrotoluene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Diethyl phthalate	10	10 U V	10 U V	10 U V	10 U V	10 U V			
4-Chlorophenyl-phenyl ether	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Fluorene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
4-Nitroaniline	50	52 U V	52 U V	50 U V	51 U V	51 U V			
4,6-Dinitro-2-methylphenol	50	52 U V	52 U V	50 U V	51 U V	51 U V			
N-Nitrosodiphenylamine	10	10 U V	10 U V	10 U V	10 U V	10 U V			
4-Bromophenyl phenyl ether	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Hexachlorobenzene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Pentachlorophenol	50	52 U V	52 U V	50 U V	51 U V	51 U V			
Phenanthrene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Anthracene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Di-n-butyl phthalate	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Fluoranthene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Pyrene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Butylbenzyl phthalate	10	10 U V	10 U V	10 U V	10 U V	10 U V			
3,3'-Dichlorobenzidine	20	21 U V	21 U V	20 U V	20 U V	20 U V			
Benzo(a)anthracene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Chrysene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Bis(2-ethylhexyl)phthalate	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Di-n-octyl phthalate	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Benzo(b)fluoranthene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Benzo(k)fluoranthene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Benzo(a)pyrene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Indeno(1,2,3-cde)pyrene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Dibenz(a,h)anthracene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Benzo(g,h,i)perylene	10	10 U V	10 U V	10 U V	10 U V	10 U V			
Total semivolatile BNA concentration (ppb)	0	0	0	0	0	0			

E Exceeds calibration range.

U Indicates the compound was not detected above the Instrument Quantitation Limit.

J Quantitation is approximate due to limitations identified during the quality control review.

CRQL Contract Required Quantitation Limit in Micrograms per Liter (ug/L), Parts per Billion (ppb).

DQ Data Qualifier

V Valid

A Acceptable with qualifications

R Rejected

(07/03/90)

ER DEPARTMENT DATA ASSESSMENT  
SUMMARY REPORT FORM

Batch No. 8903L833 Site Solar Ponds  
Laboratory Roy F. Weston - Lionville No. of Samples/Matrix 4/Water  
SOW # 10/86 (Rev. 2/88) Reviewer Org. TechLaw, Inc.  
Sample Numbers SW094001, SW095001, SW094001D, SW095001FB

Data Assessment Summary

	Pesticides/PCB	Comments
1. Holding Times	<u>V</u>	
2. Instrument Performance	<u>V</u>	
3. Calibrations	<u>X</u>	<u>Comment 1</u>
4. Blanks	<u>X</u>	<u>Comment 2</u>
5. Surrogates	<u>A</u>	<u>Action Item 1; Comment 3</u>
6. Matrix Spike/Dup.	<u>V</u>	
7. Other QC	<u>X</u>	<u>Comments 4,5</u>
8. Compound Identification	<u>V</u>	
9. System Performance	<u>V</u>	
10. Overall Assessment	<u>A</u>	<u>Data acceptable with qualifications.</u>

V = Data had no problems.

A = Data acceptable but qualified due to problems.

R = Data rejected.

X = Problems, but do not affect data.

**Data Quality:** Data contained in this batch were reviewed and found to be acceptable with qualifications. Acceptable, qualified data may be used provided that individual values impacted by the "Action Items" listed below are appropriately flagged. (Refer to attached Data Summary Table.)



**Action Items:** 1) The Percent Recovery of surrogate Dibutylchloride (DBC) for sample SW094001 is reported as "I" on Form 2E. It is not clear what the actual recovery is, although the Case Narrative states that all surrogate recoveries are within EPA OC limits. There appears to be a DBC peak on the sample chromatogram which has shifted late, but this is not identified by the laboratory as DBC. Therefore, all non-detected results in sample SW094001 are estimated and undetected (U).

**Comments:** 1) In the initial calibration on instrument 14, Aldrin's and DDT's %RSDs exceeded 10%. Although no corrective maintenance is evident, no action is necessary because there were no positive results for these compounds.

2) The method blank was diluted 2x with no explanation offered.

3) Form 2E indicated no Percent Recovery for sample SW094001 and "DBC" was crossed off of the chromatogram. However, a %D for DBC was inexplicably generated on Form 8E.

4) The Form 1Ds indicate that 990 milliliters of sample was extracted for each sample; however, the CROLS were not adjusted accordingly. Therefore, the CROLS were corrected and the changed results are reported on the Data Summary Tables.

5) The Form 9s in this batch did not include the multiresponse compounds (Aroclors and Toxaphene). No action is necessary; however, these compound should have been included.

**Note:** Data Summary Tables are attached.

Jill Sanchez  
Reviewer Signature

7-9-90  
Date

SITE NAME: Solar Ponds

CLP PESTICIDES/PCB ANALYSIS: Low Water

## ANALYTICAL RESULTS (ug/L)

Sample Location	PBUK321	SW064001	SW065001	SW064001D	SW065001FB				
Sample Number		3/27/89	3/27/89	3/27/89	3/27/89				
Sample Date		x10 Dilution	x10 Dilution	Duplicate	Field Blank				
Remarks	Method Blank								
Chlorinated Pesticides	CRQL ug/L	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ
Analysis									
alpha - BHC	0.050	0.51 U A	0.51 U V	0.51 U V	0.051 U V				
beta - BHC	0.050	0.51 U A	0.51 U V	0.51 U V	0.051 U V				
delta - BHC	0.050	0.51 U A	0.51 U V	0.51 U V	0.051 U V				
gamma - BHC (Lindane)	0.050	0.51 U A	0.51 U V	0.51 U V	0.051 U V				
Heptachlor	0.050	0.51 U A	0.51 U V	0.51 U V	0.051 U V				
Aldrin	0.050	0.51 U A	0.51 U V	0.51 U V	0.051 U V				
Heptachlor epoxide	0.050	0.51 U A	0.51 U V	0.51 U V	0.051 U V				
Endosulfan I	0.050	0.51 U A	0.51 U V	0.51 U V	0.051 U V				
Dieldrin	0.10	1.0 U A	1.0 U V	1.0 U V	0.10 U V				
4,4' - DDE	0.10	1.0 U A	1.0 U V	1.0 U V	0.10 U V				
Endrin	0.10	1.0 U A	1.0 U V	1.0 U V	0.10 U V				
Endosulfan II	0.10	1.0 U A	1.0 U V	1.0 U V	0.10 U V				
4,4' - DDD	0.10	1.0 U A	1.0 U V	1.0 U V	0.10 U V				
Endosulfan sulfate	0.10	1.0 U A	1.0 U V	1.0 U V	0.10 U V				
4,4' - DDT	0.10	1.0 U A	1.0 U V	1.0 U V	0.10 U V				
Methoxychlor	0.50	5.1 U A	5.1 U V	5.1 U V	0.51 U V				
Endrin Ketone	0.10	1.0 U A	1.0 U V	1.0 U V	0.10 U V				
alpha - Chlordane	0.50	5.1 U A	5.1 U V	5.1 U V	0.51 U V				
gamma - Chlordane	0.50	5.1 U A	5.1 U V	5.1 U V	0.51 U V				
Toxaphene	1.0	10 U A	10 U V	10 U V	1.0 U V				
Aroclor - 1016	0.50	5.1 U A	5.1 U V	5.1 U V	0.51 U V				
Aroclor - 1221	0.50	5.1 U A	5.1 U V	5.1 U V	0.51 U V				
Aroclor - 1232	0.50	5.1 U A	5.1 U V	5.1 U V	0.51 U V				
Aroclor - 1242	0.50	5.1 U A	5.1 U V	5.1 U V	0.51 U V				
Aroclor - 1248	0.50	5.1 U A	5.1 U V	5.1 U V	0.51 U V				
Aroclor - 1254	1.0	10 U A	10 U V	10 U V	1.0 U V				
Aroclor - 1260	1.0	10 U A	10 U V	10 U V	1.0 U V				
Total Chlorinated Pesticides (ppb)		0	0	0	0	0	0	0	0

E Exceeds calibration range.

U Indicates the compound was not detected above the Instrument Quantitation Limit

J Quantitation is approximate due to limitations identified during the quality control review

CRQL Contract Required Detection Limit in Micrograms per Liter (ug/L), Parts per Billion (ppb)

DQ Data Qualifier

V Valid

A Acceptable with qualifications

R Rejected

3LB33/pcb

George 250 Metals  
Custody Transfer Record/Lab Work Request

WESTON Analytics Use Only

89031833

Client Rockwell (Rocky Flats)  
Work Order 2029-33-04 38-01  
Date Rec'd 3-30-89 Date Due 4-27-89  
RFW Contact Janell Bergman  
Client Contact/Phone (303) 980 6800

# Custody Transfer Record/Lab Work Request



WA Use Only Lab ID	Client ID/Description	Refrigerator#		#/Type Container		Volume		Preservative		ANALYSES REQUESTED	
		Matrix	Date Collected	W	X	W	X	W	X	W	X
001	SW 094001 MS/MSO	W	3-27-89	X	X	X	X	X	X	X	X
002	SW 095001	W		X	X	X	X	X	X	X	X
003	TR 032787	W		X	X	X	X	X	X	X	X
004	SW 095001 FB	W		X	X	X	X	X	X	X	X
005	SW 094001 D	W		X	X	X	X	X	X	X	X
006	SW 094001 MS/MSO	W		X	X	X	X	X	X	X	X
007	SW 095001	W		X	X	X	X	X	X	X	X
008	SW 095001 F.B	W		X	X	X	X	X	X	X	X
009	SW 094001 Dwp	W		X	X	X	X	X	X	X	X

Matrix: W - Water DS - Drum Solids  
S - Soil O - Oil DL - Drum Liquids  
SE - Sediment A - Air F - Fish  
SO - Solid W - Wipe X - Other

Special Instructions: 2 - bne 3 - pest/pob 4 - cyanide  
5 - filtered to metals, Mo, Br, Ca, Li, Ba, Sr  
6 - unfiltered to metals, Mo, Br, Ca, Li, Ba, Sr

Item/Reason	Relinquished by	Received by	Date	Time	Item/Reason	Relinquished by	Received by	Date	Time
	Janell Bergman	Janell Bergman	3-27-89	15:30	001	Janell Bergman	Janell Bergman	3-27-89	15:30
	Janell Bergman	Janell Bergman	3-27-89	17:30	002	Janell Bergman	Janell Bergman	3-27-89	17:30
	Janell Bergman	Janell Bergman	3-27-89	19:15	003	Janell Bergman	Janell Bergman	3-27-89	19:15
BNA/261	Janell Bergman	Janell Bergman	3-27-89	19:30	004	Janell Bergman	Janell Bergman	3-27-89	19:30
ALL	Janell Bergman	Janell Bergman	3-27-89	19:30	005	Janell Bergman	Janell Bergman	3-27-89	19:30
	Janell Bergman	Janell Bergman	3-27-89	19:30	006	Janell Bergman	Janell Bergman	3-27-89	19:30
	Janell Bergman	Janell Bergman	3-27-89	19:30	007	Janell Bergman	Janell Bergman	3-27-89	19:30
	Janell Bergman	Janell Bergman	3-27-89	19:30	008	Janell Bergman	Janell Bergman	3-27-89	19:30
	Janell Bergman	Janell Bergman	3-27-89	19:30	009	Janell Bergman	Janell Bergman	3-27-89	19:30

RFW 21-21-001/A-7488 1 sample 90 pc / 2 SW 94001

1 sample = 80 pc / 2 SW 95001

WESTON Analytics Use Only

Samples Were: Shipped or Hand Delivered

NOTES: 2 Ambient or Killed

NOTES: 3 Received Broken/Leaking (Improperly Sealed) Y

NOTES: 4 Properly Preserved

NOTES: 5 Received Within Holding Time

COC Tape Was: 1 Present on Outer Package Y 2 Unbroken on Outer Package Y 3 Present on Sample Y 4 Unbroken on Sample Y

NOTES: 1 Present Upon Receipt of Samples Y

Discrepancies Between Sample Labels and COC Record? Y

ACCU-LABS RESEARCH, INC.  
TOTAL RADIOCHEMISTRY  
DATA SUMMARY REPORT

8903L 833

RFW Batch Number:

Client: ROCKWELL (ROCKY FLATS)

Page: 1

Sample Information

RFW Batch ID: ~~3100~~ 3100-754-100 ✓  
Customer ID: SW094001 UNFILTERED ✓  
ACCU-LABS SAMPLE ID: 9612-29790-8-1  
Matrix: LG Q2 Set

3100-755-100 ✓  
SW094001 FILTERED ✓  
9612-29790-8-2

3100-756-100 ✓  
SW095001 UNFILTERED ✓  
9612-29790-8-3

Radio Chemistry

Gross Alpha.....	220 ± 80	pci/l	180 ± 70	pci/l	340 ± 130	pci/l
Gross Beta.....	140 ± 30	pci/l	100 ± 30	pci/l	250 ± 50	pci/l
Uranium 233, 234.....	68 ± 4	pci/l .5	78 ± 5	pci/l .7	43 ± 4	pci/l .9
Uranium 235.....	3.9 ± 1.0	pci/l .6	4.2 ± 1.2	pci/l .6	2.5 ± 1.0	pci/l .5
Uranium 238.....	43 ± 3	pci/l .9	47 ± 4	pci/l .8	25 ± 3	pci/l .7
Strontium 89+90.....	-0.1 ± 0.4	pci/l	0.3 ± 0.5	pci/l	0.2 ± 0.5	pci/l
Plutonium 239, 240.....	0.28 ± 0.03	pci/l .003	0.00 ± 0.01	pci/l .01	11 10 ± 1.12	pci/l .01
Americium 241.....	0.05 ± 0.06	pci/l .01	-0.01 ± 0.03	pci/l .004	2.2 ± 0.1	pci/l .01
Cesium 137.....	0.3 ± 0.6	pci/l	0.5 ± 0.6	pci/l	0.2 ± 0.7	pci/l
Tritium.....	2800 ± 200	pci/l	2700 ± 200	pci/l	4.4 ± 0.8	pci/l .20
Radium 226.....	1.3 ± 0.4	pci/l .20	0.6 ± 0.3	pci/l .2	5.3 ± 4.0	pci/l
Radium 228.....						

RFW Batch Number:

Client: ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID: ~~3100~~ 3100-757-100 ✓  
Customer ID: SW095001 FILTERED ✓  
ACCU-LABS SAMPLE ID: 9612-29790-8-4  
Matrix:

3100-758-100 ✓  
SW094001D UNFILTERED ✓  
9612-29790-8-5

3100-759-100 ✓  
SW094001D FILTERED ✓  
9612-29790-8-6

Radio Chemistry

Gross Alpha.....	110 ± 60	pci/l	120 ± 70	pci/l	170 ± 70	pci/l
Gross Beta.....	130 ± 30	pci/l	100 ± 30	pci/l	110 ± 30	pci/l
Uranium 233, 234.....	74 ± 5	pci/l .9	70 ± 4	pci/l .4	80 ± 7	pci/l .2
Uranium 235.....	2.9 ± 1.0	pci/l .7	1.9 ± 0.7	pci/l .10	3.3 ± 1.4	pci/l .4
Uranium 238.....	48 ± 4	pci/l .7	48 ± 4	pci/l .60	51 ± 5	pci/l .7
Strontium 89+90.....	-0.2 ± 0.4	pci/l	-0.2 ± 0.4	pci/l	-0.3 ± 0.5	pci/l
Plutonium 239, 240.....	0.01 ± 0.01	pci/l .003	0.79 ± 0.06	pci/l .004	0.00 ± 0.01	pci/l .003
Americium 241.....	-0.01 ± 0.03	pci/l .01	0.29 ± 0.04	pci/l .004	0.01 ± 0.01	pci/l
Cesium 137.....	0.9 ± 0.6	pci/l	0.1 ± 0.7	pci/l	0.3 ± 0.6	pci/l
Tritium.....	2700 ± 200	pci/l	2700 ± 200	pci/l		
Radium 226.....	0.8 ± 0.3	pci/l .2	1.0 ± 0.5	pci/l .2	0.5 ± 0.3	pci/l .2
Radium 228.....			.9			

29790-03



ER PROGRAM DATA ASSESSMENT  
SUMMARY REPORT FORM

Batch No. 8903L833 Site Site Background Characterization  
Laboratory Roy F. Weston-Lionville No. of Samples/Matrix 8/Water  
SOW # 7/87 Reviewer Org. TechLaw, Inc.  
Sample Numbers SW094001 (total), SW094001D (total), SW094001FB (total), SW095001 (total),  
SW094001 (soluble), SW094001D (soluble), SW094001FB (soluble), SW095001 (soluble)

Data Assessment Summary

	ICP	AA	Hg	CN	Comments
1. Holding Times	<u>V</u>	<u>V</u>	<u>V</u>	<u>V</u>	
2. Calibrations	<u>V</u>	<u>V</u>	<u>V</u>	<u>V</u>	
3. Blanks	<u>A</u>	<u>A</u>	<u>A</u>	<u>V</u>	<u>Action Items 1-4</u>
4. ICP Interference Check Sample	<u>A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>Action Item 5</u>
5. Lab Control Sample Results	<u>V</u>	<u>V</u>	<u>V</u>	<u>V</u>	
6. Duplicate Sample Results	<u>V</u>	<u>V</u>	<u>V</u>	<u>V</u>	
7. Matrix Spike Sample Results	<u>A</u>	<u>A</u>	<u>V</u>	<u>V</u>	<u>Action Items 6-11</u>
8. Method of Standard Addition	<u>N/A</u>	<u>V</u>	<u>N/A</u>	<u>N/A</u>	
9. Serial Dilution	<u>V</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	
10. Sample Verification	<u>V</u>	<u>V</u>	<u>V</u>	<u>V</u>	
11. Other QC	<u>V</u>	<u>V</u>	<u>V</u>	<u>V</u>	
12. Overall Assessment	<u>A</u>	<u>A</u>	<u>A</u>	<u>V</u>	<u>Data valid, or acceptable with qualifications</u>

V = Data had no problems.

A = Data acceptable but qualified due to problems.

R = Data rejected.

X = Problems, but do not affect data.

N/A = Not applicable.

**Data Quality:** Data contained in this batch were reviewed and found to be valid, or acceptable with qualifications. Acceptable, qualified data may be used provided that individual values impacted by the "Action Items" listed below are appropriately flagged.  
(Refer to attached Results Summary Tables).

**Action Items:** 1) Calcium, Iron, and Magnesium values for SW094001FB (total and soluble) are estimated and undetected (UJ) because analyte values >IDL were found in the blanks.

2) Lead values for SW094001 (total), SW095001 (total), and SW094001FB (soluble) are estimated and undetected (UJ) because Lead values >IDL were found in the blanks.

3) All Mercury values except SW094001FB (total and soluble) are estimated and undetected (UJ) because mercury values >IDL were found in the blanks.

4) All Vanadium values are estimated (J) because of negative bias indicated in the blanks.

5) Zinc, Manganese, Copper, and Beryllium values for SW094001 (total and soluble), SW095001 (total and soluble), and SW094001D (total and soluble) are estimated (J) because of possible Calcium and Sodium interference as indicated in the Interference Check Sample.

6) All Silver values are estimated (UJ) because the matrix spike recovery was outside control limits.

7) Selenium values for all samples except SW094001FB (total and soluble) are estimated (J) because the pre-digestion matrix spike recovery was outside control limits.

8) Selenium values for SW094001FB (total and soluble) are rejected (R) because the pre-digestion matrix spike recovery was <30%.

9) The Arsenic value for SW095001 (total) and SW094001D (soluble) are estimated (J) because the post-digestion matrix spike recovery was outside control limits.

10) The Thallium non-detect for SW094001 (total) is estimated and undetected (UJ) because the post-digestion matrix spike recovery was outside control limits.

11) All Lead non-detects are estimated and undetected (UJ) because the post-digestion matrix spike recovery was outside control limits.

Comments: None

---

---

---

---

---

Note: Data Summary Tables are attached.

Robert J. Drell  
Reviewer Signature

1/12/90  
Date



TABLE #: 8903L833

Page 1 of 1

## SITE NAME: Site Background Characterization

## CLP WATER INORGANIC ANALYSIS: Low Water

## ANALYTICAL RESULTS (ug/L)

Sample Location	SW094001	SW095001	SW094001FB	SW094001D	SW094001	SW094001D	SW094001D	SW094001FB	SW094001D	SW094001FB	SW095001
Sample Number	3/30/89	3/30/89	3/30/89	3/30/89	3/30/89	3/30/89	3/30/89	3/30/89	3/30/89	3/30/89	3/30/89
Sample Date	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Remarks											
Inorganic											
Analyte	DL	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ
ug/L											
Aluminum	Al 200	238	V 517	V 30.4	V 247	V 196	V 224	V 30.4	V 207	V 207	V
Antimony	Sb 60	50.0 U	V 50.0 U	V 50.0 U	V 50.0 U	V 50.0 U	V 50.0 U	V 50.0 U	V 50.0 U	V 50.0 U	V
Arsenic	As 10	1.3 U	V 1.3 J	A 1.3 U	V 1.3 U	V 1.3 U	V 1.5 J	A 1.3 U	V 1.3 U	V 1.3 U	V
Barium	Ba 200	157	V 144	V 5.8 U	V 154	V 144	V 151	V 5.8 U	V 141	V 141	V
Beryllium	Be 5	1.2 J	A 1.2 J	A 0.2 U	V 1.2 J	A 0.8 J	A 1.2 J	A 0.2 U	V 1.2 J	A 1.2 J	A
Cadmium	Cd 5	2.2 U	V 2.2 U	V 2.2 U	V 2.2 U	V 2.2 U	V 2.2 U	V 2.2 U	V 2.2 U	V 2.2 U	V
Calcium	Ca 5000	368000	V 320000	V 102 UJ	A 363000	V 330000	V 360000	V 38.5 UJ	A 328000	V 328000	V
Cesium	Cs 1000	1000 U	V 1000 U	V 1000 U	V 1000 U	V 1000 U	V 1000 U	V 1000 U	V 1000 U	V 1000 U	V
Chromium	Cr 10	2.6 U	V 2.6 U	V 2.6 U	V 2.6 U	V 2.6 U	V 2.6 U	V 2.6 U	V 2.6 U	V 2.6 U	V
Cobalt	Co 50	4.0 U	V 4.0 U	V 4.0 U	V 4.0 U	V 4.0 U	V 4.0 U	V 4.0 U	V 4.4	V 4.4	V
Copper	Cu 25	21.2 J	A 19.0 J	A 2.5	V 19.7 J	A 19.7 J	A 20.2 J	A 3.2	V 19.9 J	A 19.9 J	A
Iron	Fe 100	121	V 480	V 8.0 UJ	A 132	V 76.6	V 112	V 18.3 UJ	A 72.2	V 72.2	V
Lead	Pb 5	1.8 UJ	A 2.2 UJ	A 1.5 UJ	V 1.5 UJ	A 1.5 UJ	A 1.5 UJ	A 1.7 UJ	A 1.5 UJ	A 1.5 UJ	A
Lithium	Li 100	400	V 412	V 100 U	V 493	A 496	A 491	A 100 U	A 445	V 445	V
Magnesium	Mg 5000	100000	V 86500	V 34.4 UJ	A 88800	V 89700	V 97300	V 18.7 UJ	A 88000	V 88000	V
Manganese	Mn 15	19.2 J	A 33.3 J	A 1.0	V 19.5 J	A 18.2 J	A 16.5 J	A 0.7	V 16.1 J	A 16.1 J	A
Mercury	Hg 0.2	0.25 UJ	A 0.15 UJ	A 0.10 U	V 0.30 UJ	A 0.20 UJ	A 0.25 UJ	A 0.10 U	V 0.25 UJ	A 0.25 UJ	A
Molybdenum	Mo 200	100 U	V 100 U	V 100 U	V 100 U	V 100 U	V 100 U	V 100 U	V 100 U	V 100 U	V
Nickel	Ni 40	8.9	V 11.8 U	V 6.5 U	V 11.5	V 9.6	V 8.5	V 6.5 U	V 9.6	V 9.6	V
Potassium	K 5000	78900	V 67200	V 665 U	V 76000	V 68600	V 76100	V 665 U	V 68200	V 68200	V
Selenium	Se 5	16.2 J	A 11.8 J	A 1.8 U	R 14.8 J	A 14.2 J	A 14.6 J	A 1.8 U	R 11.6 J	A 11.6 J	A
Silver	Ag 10	8.7 UJ	A 6.7 UJ	A 6.7 UJ	A 6.7 UJ	A 6.7 UJ	A 6.7 UJ	A 6.7 UJ	A 6.7 UJ	A 6.7 UJ	A
Sodium	Na 5000	546000	V 488000	V 266	V 544000	V 500000	V 543000	V 52.6 U	V 498000	V 498000	V
Strontium	Sr 200	3280	V 2830	V 100 U	V 3230	V 2940	V 3180	V 100 U	V 2870	V 2870	V
Thallium	Tl 10	31.0 UJ	A 31.0 U	V 3.1 U	V 31.0 U	V 31.0 U	V 31.0 U	V 3.1 U	V 31.0 U	V 31.0 U	V
Tin	Sn 200	118	V 100 U	V 100 U	V 114	V 100 U	V 114	V 100 U	V 100 U	V 100 U	V
Vanadium	V 50	12.0 J	A 5.0 J	A 2.2 J	A 12.8 J	A 4.7 J	A 12.3 J	A 9.2 J	A 8.7 J	A 8.7 J	A
Zinc	Zn 20	24.8 J	A 39.1 J	A 11.3	V 25.7 J	A 28.9 J	A 28.9 J	V 4.2 J	A 24.8 J	A 24.8 J	A
Cyanide	Cy 10	10.0 U	V 10.0 U	V 10.0 U	V 10.0 U	V 10.0 U	V 10.0 U	N/R	N/R	N/R	N/R

E Estimated by the Laboratory

U Indicates the compound was not detected above the Instrument Quantitation Limit

J Quantitation is approximate due to limitations identified during the quality control review

DL Detection Limit in Micrograms per Liter (ug/L)

N/R Not reported

DQ Data Qualifier

V Valid

A Acceptable with qualifications

R Rejected

L833L/H20J

